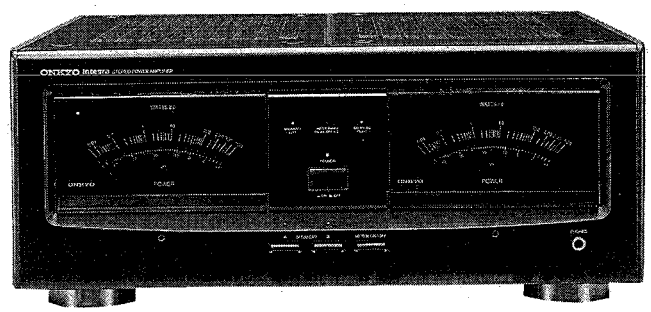
M-5890

Ref. No. 3434

ONKYO® SERVICE MANUAL

Stereo Power Amplifier
MODEL M-5890



Black and silver models

UP	230V AC, 50Hz

SAFETY-RELATED COMPONENT WARNING

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

Power Output:
200 Watts per channel, min. RMS, at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.005% Total harmonic Distortion
215 Watts per channel, min. RMS, at 8 ohms, both channels driven from 1 kHz, with no more than 0.005% Total harmonic Distortion

Dynamic Power Output:	2 × 750 Watts at 2 ohms 2 × 505 Watts at 4 ohms 2 × 290 Watts at 8 ohms
Continuous Power Output:	2 × 360 Watts at 4 ohms, 1 kHz (DIN) 2 × 235 Watts at 8 ohms, 1 kHz (DIN)
Total Harmonic Distortion:	0.005% at rated power 0.005% at 1 watt output
Intermodulation Distortion:	0.005% at 70 Hz : 7 kHz = 4 : 1
Frequency Response:	
BALANCED:	+0, −1.5 dB at 1 Hz-100 kHz
Input Sensitivity and Impedance:	
BALANCED:	1.0V 45 kohms (Hot-Cold)
UNBALANCED:	1.0V 20 kohms
Damping factor:	180 at 8 ohms, 1kHz
Signal-to-Noise Ratio:	120 dB (A-Weighted, Shorted)
Power Supply:	
European models:	AC230V, 50 Hz
Controls (Front):	POWER SPEAKERS (A, B) (ON/OFF) METER (ON/OFF)
(Rear):	INPUT SELECTOR (L, R) (BALANCED/UNBALANCED) LEVEL (UNBALANCED) (L, R)
Meter Range:	× 1 0 dB=200W at 8 ohms × 0.1 0 dB=20W at 8 ohms (Automatic Range Select)
Inputs:	BALANCED, UNBALANCED (VARIABLE)
Outputs:	HEADPHONE, SPEAKERS (A, B)
Dimensions:	455 (W) × 190 (H) × 426 (D) 17-15/16" (W) × 7-1/2" (H) × 16-3/4" (D)
(side panels included)	475 (W) × 191 (H) × 418 (D) 18-11/16" (W) × 7-1/2" (H) × 16-3/4" (D)
Weight:	29.6 kg (65.3 lbs.)
(side panels included)	31.0 kg (68.3 lbs.)

Specifications and features are subject to change without notice.

PRECAUTIONS

1. Replacing the fuses

For continued protection against risk fire, replace only with same type and same rating fuse.

CIRCUIT NO.	PART NO.	DESCRIPTION
F903,F904	252077 or 252077CC	4A-SE-EAK or 4A-SE-EAK, Primary fuse

2. Replacing the lamp

This unit uses the lamp listed below.

CIRCUIT NO.	PART NO.	DESCRIPTION
PL801~PL804	210191A	PL14V150mA

ADJUSTMENT PROCEDURES

1. Preparation

(1) Place the unit on the work bench in the correct direction.
(2) Verify that it has no load no signal, and the LEVEL control is at minimum.
(3) Make sure that there is no air flow from outside when adjusting.
(4) Turn the switch from BALANCED to UNBALANCE.

2. Meter 0 Point Adjustment

(1) Turn the power OFF.
(2) By turning the 0 point adjustment screw on the meter, match the meter needle to 0.

NOTE: Do not make this adjustment right after turning the power OFF.

3. Idling Current Adjustment

Measuring Points: Check sockets P751 and P752 on PC board (NAMA-4516)
Adjustment Spots: Semi-fixed variable resistors R1508 and R1523.

(1) Turn the power ON.
(2) After conditioning it for 15 minutes or so, adjust it to 23mV ± 3mV.

4. Meter off-Set Adjustment

Adjustment Spots: Variable resistors R777 (R778) on PC board (NAETC-4526).

(1) Adjust it so that the meter needle indicates 0.

5. Meter Level Adjustment

Preparation : Apply 1 kHz signal to amp input.
Bring amp output to 12.65V (22.0dBV).
Adjustment Spots: Semi-fixed Variable resistor R865 (R866) on PC board (NAETC -4526).

NOTE: Do not apply signals simultaneously to L channel and R channel.

(1) Adjust it so that the meter needle indicates 0dB.

6. Meter Range Adjustment

Preparation : Apply 1kHz signal to amp input.
Bring amp output to 25.0dBV (20w ± 3dB).
Adjustment Spots: Variable resistor R867 (R868) on PC board (NAETC-4526).

NOTE: Do not apply signals simultaneously to L channel and R channel.

(1) Adjust it after the meter range LED is lit. (Turn variable resistor clock-wise.)

7. Protective Circuit Function Verification

(1) Turn the power ON.
①The meter dose not move if a signal is applied.
The meter lamp dose not light.
②The relay (RL701) on PC board (NAETC-4518) will close after approximately 5 seconds.
The meter lamp will light.
The meter will respond to incoming signals.

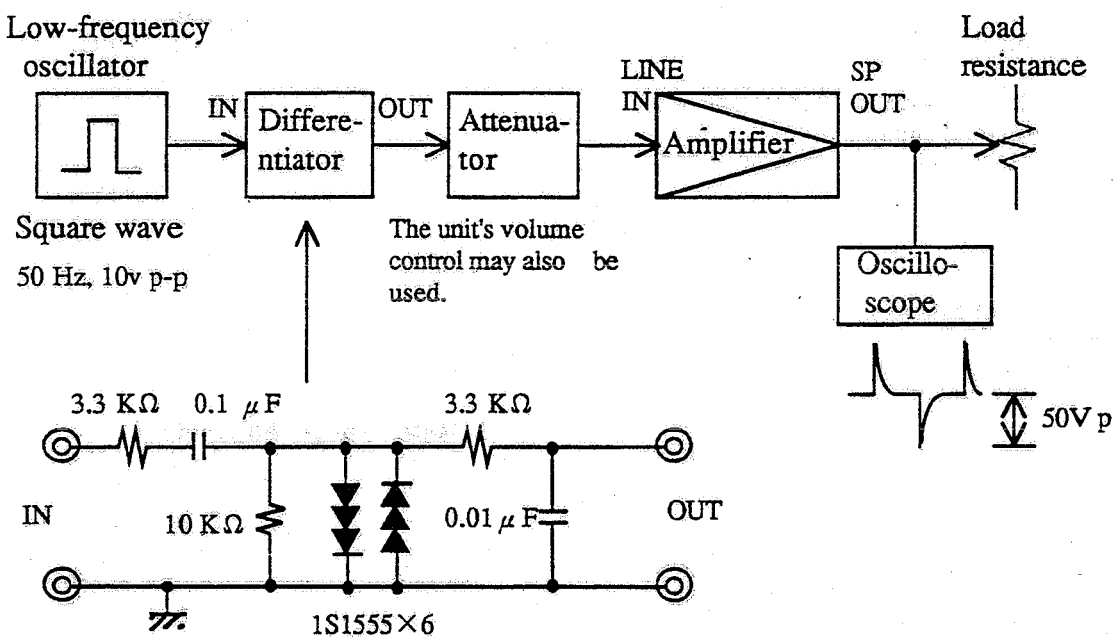
8. Verification of Direct Current Detection Circuit of the Protective Circuit

(1) Apply 1v.DC to input with no load.
The speaker relay will open.
The lamp will turn off.
(2) It functions the same at 1v.DC.
NOTE: Make sure to never connect it to any load or short-circuit load terminals during this test.

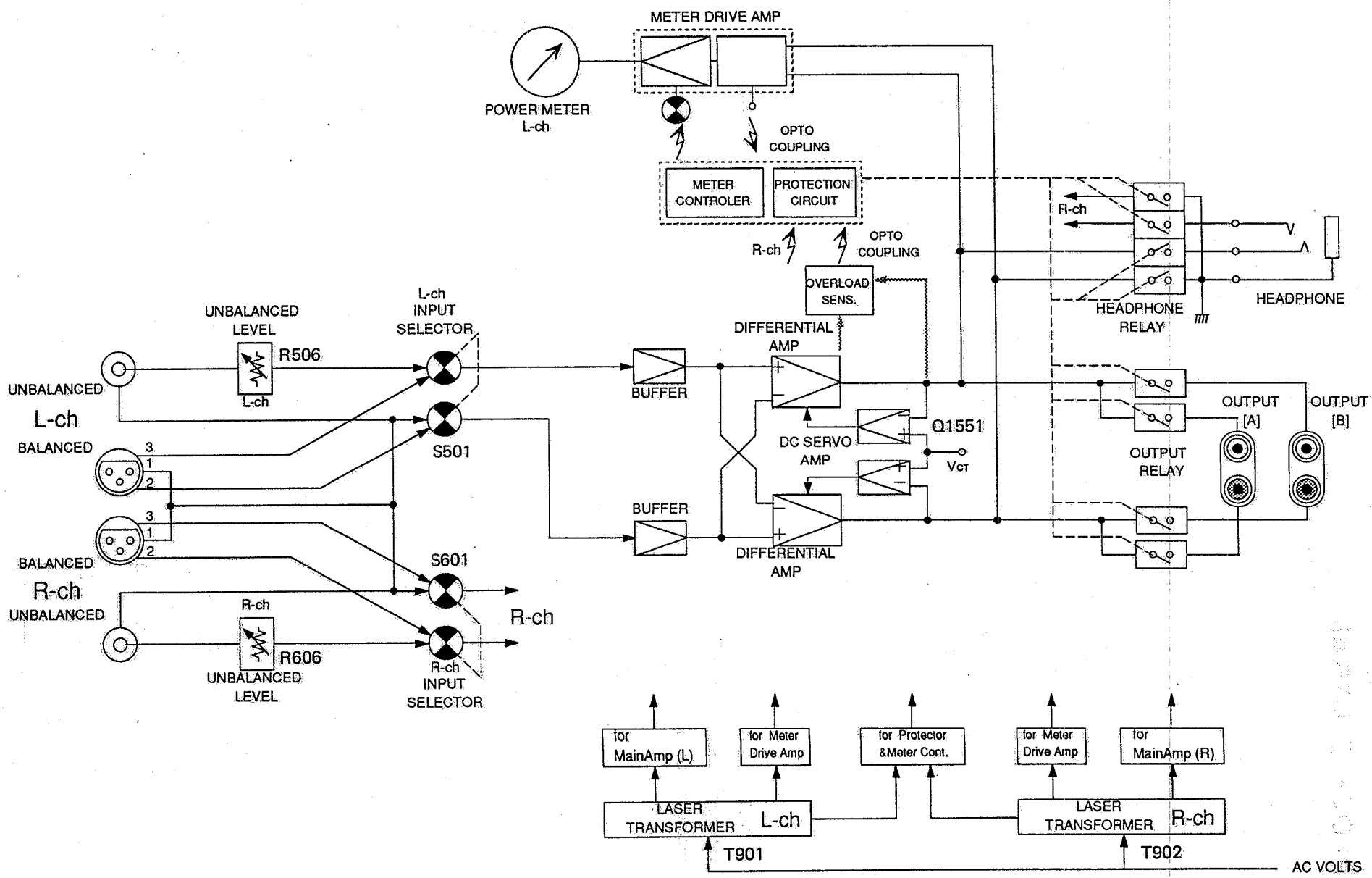
9. Verification of Current Detection Function of the Protective Circuit

(1) With no load, apply a signal from the circuit as shown in the following diagram.
Adjust the amp level so that the amp output peak will be 50V.
(2) Verify that the speaker relay (RL701) will not open when a 2 ohm resistance is connected to the amp output terminals.
(3) Verify that the speaker relay will repeatedly open/close for a few times then hold open when a 0.5 ohm resistance is connected to the output terminals.

NOTE: Do not continue this test for over 1 minute.

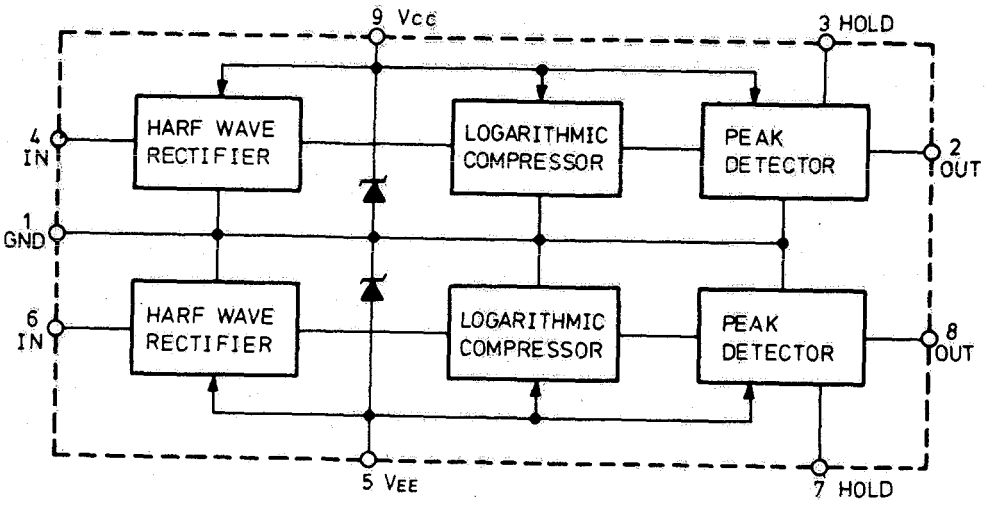


BLOCK DIAGRAM

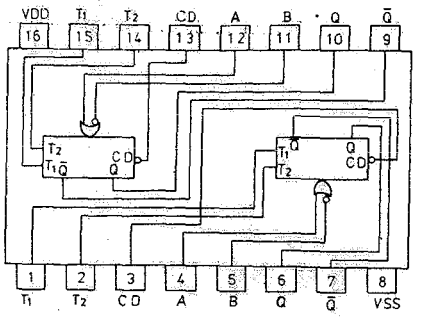


IC BLOCK DIAGRAM

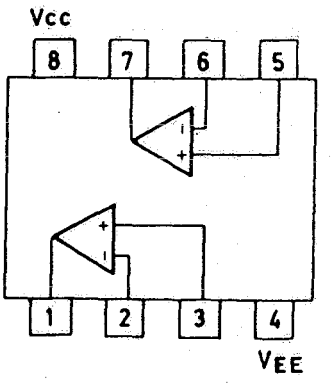
TA7318P (Meter Driver)



4538B(Dual precision retriggerable/resettable monostable mulitivibrator)



NJM5532DD(OPAmp)
NJM4558DX
NJM4560DX



Truth Table

Input			Output	
A	B	CD	Q	Q̄
↑	H	H	⊓	⊔
↑	L	H	Q	Q̄
H	↓	H	Q	Q̄
L	↓	H	⊓	⊔
X	X	L	L	H

X : H or L

PRINTED CIRCUIT BOARD – PARTS LIST

MAIN CIRCUIT PC BOARD(NAAF-4516-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q1551	222902	NJM5532DD
	Transistors	
Q1501,Q1504	2211255	2SC1815-GR
Q1502,Q1503	2211455	2SA1015-GR
Q1505	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q1506,Q1507	2211793 or	2SA992-E or
	2211792	2SA992-F
Q1509,Q1512	2211455	2SA1015-GR
Q1510,Q1511	2211255	2SC1815-GR
Q1513	2211793 or	2SA992-E or
	2211792	2SA992-F
Q1514,Q1515	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q1516	2212864	2SC3419-Y
Q1517	2214725 or	2SC3708-S or
	2214726	2SC3708-T
Q1518,Q1520	2214715 or	2SA1450-S or
	2214716	2SA1450-T
Q1519	2214725 or	2SC3708-S or
	2214726	2SC3708-T
Q1521,Q1523	2202625 or	2SD1724-S or
	2202626	2SD1724-T
Q1522,Q1524	2202615 or	2SB1167-S or
	2202616	2SB1167-T
Q1552,Q1554	2211654	2SC2235-Y
Q1553,Q1555	2211644	2SA965-Y
Q1556,Q1702	2211792 or	2SA992-F or
Q1704,Q1706	2211793	2SA992-E
Q1708,Q1709		
Q1557,Q1701	2211732 or	2SC1845-F or
Q1703,Q1705	2211733	2SC1845-E
Q1707,Q1710		
	Photo couplers	
Q1711,Q1712	24120032	TLP-521-1
	Diodes	
D1501~D1506	223163 or	1SS133 or
D1509,D1510	223205	1SS270A
D1507,D1508	22380029	HER102
D1511,D1512	225251	TLR112,LED
D1551~D1554		
D1555,D1556	224451503	MTZ15C,Zener
	Coils	
L1601,L1602	231209	S-0.4A
	Capacitors	
C1505	374722234	0.022 μF,50V,Film(TF)
C1508,C1520	393300107	1 μF,160V,Elect.(VX)
C1509,C1521	391654707	47 μF,25V,Elect.(FS)
C1512,C1524	373792244	0.22 μF,63V,Film(MKT)
C1517	374722234	0.022 μF,50V,Film(TF)
C1525,C1528	3500149	330 μF,160V,Elect.
C1526,C1527	393322217	220 μF,6.3V,Elect.(VX)
C1529	393393317	330 μF,100V,Elect.(VX)
C1530,C1531	373731034	0.01 μF,100V,Film(MKT)
C1532~C1535	374733934	0.039 μF,100V,Film(TF)
C1536,C1537	391654707	47 μF,25V,Elect.(FS)
C1538~C1540	373552434	0.024 μF,250V,Film(MKP)

CIRCUIT NO.	PART NO.	DESCRIPTION
C1551~C1554	391663307	33 μF,35V,Elect.(FS)
C1555,C1556	393361017	100 μF,35V,Elect.(VX)
C1557,C1558	391684717	470 μF,50V,Elect.(FS)
C1559	391664717	470 μF,35V,Elect.(FS)
C1560,C1561	373552434	0.024 μF,250V,Film(MKP)
C1601~C1604	374731034	0.01 μF,100V,Film(TF)
C1605,C1606	374731044	0.1 μF,100V,Film(TF)
C1609,C1610	373791044	0.1 μF,63V,Film(MKT)
C1611,C1612	373735634	0.056 μF,100V,Film(MKT)
C1701	374734734	0.047 μF,100V,Film(TF)
C1702,C1703	393344707	47 μF,16V,Elect.(VX)
C1704~C1706	374734734	0.047 μF,100V,Film(TF)
	Resistors	
R1508,R1523	5210273	N06HR4.7KBEM,Semi-fixed
R1513,R1528	442528224	8.2KΩ,1/2W,Metal oxide film
R1514,R1529	442521024	1KΩ,1/2W,Metal oxide film
R1515,R1530	442521014	100Ω,1/2W,Metal oxide film
R1531,R1532	441625624	5.6KΩ,1W,Metal oxide film
R1533,R1534	441621004	10Ω,1W,Metal oxide film
R1535,R1536	441623304	33Ω,1W,Metal oxide film
R1537	442521504	15Ω,1/2W,Metal oxide film
R1553,R1554	442524714	470Ω,1/2W,Metal oxide film
R1559,R1560	441623324	3.3KΩ,1W,Metal oxide film
R1563	441624724	4.7KΩ,1W,Metal oxide film
R1564,R1565	442521034	10KΩ,1/2W,Metal oxide film
R1566	442523324	3.3KΩ,1/2W,Matal oxide film
R1601~R1606	452530224	2.2Ω,1/2W,Metal
R1625~R1630		
R1613~R1624	4000134	0.15Ω,2W,Metal plate
R1637~R1648		
R1651	442721004	10Ω,2W,Metal oxide film
R1652,R1653	452530564	5.6Ω,1/2W,Metal
R1654,R1655	452730434	4.3Ω,2W,Metal
R1656,R1657	452530684	6.8Ω,1/2W,Metal
R1716~R1719	441626824	6.8KΩ,1W,Metal oxide film
	Socket ass'y	
P507	2009990237	NSAS-4P0342
P508	2009990239A	NSAS-16P0344
P512	2009990253	NSAS-6P0368
P510,P511	2009990254	NSAS-4P0369
P710	2009990033	NSAS-4P0063
	Plugs	
P701a	25055234	NPLG-3P218
P703a	25055233	NPLG-2P217
P741a	25055168	NPLG-5P152
P751	25055366	NPLG-2P349
P752	25055366	NPLG-2P349
	Radiator	
	27160314	RAD-94
	Plate (Bus)	
	27301602	PCS3-1-T11

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4517-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D901	22380044	RBV-1506
D902~D905	22380058	ERB93-02
D906,D907	22380029	HER102
	Capacitors	
C901,C908	374501055	1 μF,125V,Film(ME)
C902~C905	3500146	5200 μF,100V,Elect.
C906,C907	3500150	1000 μF,160V,Elect.
	Resistors	
R901	442522704	27Ω,1/2W,Metal oxide film
R902	442521014	100Ω,1/2W,Metal oxide film
R903	441824724	4.7KΩ,3W,Metal oxide film
	Socket ass'y	
P741	2009990244A	NSAS-5P0349
	Plug	
P744	25055168	NPLG-5P152
	Plates (Bus)	
	27301601	
	Radiator	
D921a	27160265	RAD-82

SPEAKER TERMINAL CIRCUIT PC BOARD (NAETC-4518-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D731~D735	223163 or	1SS133 or
	223205	1SS270A
	Capacitors	
C731,C732	374791044	0.1 μF,63V,Film(TF)
C735	374721034	0.01 μF,50V,Film(TF)
	Resistors	
R741	441723914	390Ω,2W,Metal oxide film
R743	441621004	10Ω,1W,Metal oxide film
	Relaies	
RL701,RL702	25065316	NRL-2P7A-DC12-043
RL705	25065282	NRL-2P1.25A-DC12-39
	Plugs	
P706a	25055133	NPLG-3P117
P712a	25055135	NPLG-5P119
	Terminals	
P731,P732	25060181A	NTM-2DMC107

INPUT CIRCUIT PC BOARD(NAAF-4519-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q501,Q502	2212185 or	2SK170-GR or
	2212186	2SK170-BL
Q503,Q504	2214705 or	2SJ74-GR or
	2214706	2SJ74-BL
Q505,Q506	2212654	2SC3421-Y
Q507,Q508	2212644	2SA1358-Y
Q509,Q510	2211792 or	2SA992-F or
	2211793	2SA992-E
Q511,Q512	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q513,Q514	2201944 or	2SD1763-D or
	2201945 or	2SD1763-E or
	2201946	2SD1763-F
Q515,Q516	2201934 or	2SB1186-D or
	2201935 or	2SB1186-E or
	2201936	2SB1186-F
Q517,Q518	2211792 or	2SA992-F or
	2211793	2SA992-E
Q519,Q520	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q521,Q522	2213334	2SK373-Y
Q523	2211792 or	2SA992-F or
	2211793	2SA992-E
Q524~Q526	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q527,Q528	2211792 or	2SA992-F or
	2211793	2SA992-E
	Diodes	
D501~D508	223163 or	1SS133 or
	223205	1SS270A
	Capacitors	
C503	373631014	100pF,100V,Film(KP)
C504	373631514	150pF,100V,Film(KP)
C505,C506	373632214	220pF,100V,Film(KP)
C507,C508	374731034	0.01 μF,100V,Film(TF)
C511,C512	391654707	47 μF,25V,Eiect.(FS)
C513,C514	393322217	220 μF,6.3V,Eiect.(VX)
C515	3500149	330 μF,160V,Elect.
C524,C525	373631014	100pF,100V,Film(KP)
C526~C529	393322217	220 μF,6.3V,Elect.(VX)
C534~C537	373631014	100pF,100V,Film(KP)
	Resistors	
R506	5104312	N27DGL20KA20,Variable
R529	441625624	5.6KΩ,1W,Metal oxide film
	Switch	
S501	25030360	NRS-142-2OS,Rotary
	Plugs	
P505a	25055132	NPLG-2P-116
P507a	25055099	NPLG-2P-83
P508a	25055138	NPLG-8P-122
	Radiator	
	27160220 or	RAD-51(B) or
	27160220-1	RAD-51(B)

INPUT CIRCUIT PC BOARD(NAAF-4520-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q601,Q602	2212185 or	2SK170-GR or
	2212186	2SK170-BL
Q603,Q604	2214705 or	2SJ74-GR or
	2214706	2SJ74-BL
Q605,Q606	2212654	2SC3421-Y
Q607,Q608	2212644	2SA1358-Y
Q609,Q610	2211792 or	2SA992-F or
	2211793	2SA992-E
Q611,Q612	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q613,Q614	2201944 or	2SD1763-D or
	2201945 or	2SD1763-E or
	2201946	2SD1763-F
Q615,Q616	2201934 or	2SB1186-D or
	2201935 or	2SB1186-E or
	2201936	2SB1186-F
Q617,Q618	2211792 or	2SA992-F or
	2211793	2SA992-E
Q619,Q620	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q621,Q622	2213334	2SK373-Y
Q623	2211792 or	2SA992-F or
	2211793	2SA992-E
Q624~Q626	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q627,Q628	2211792 or	2SA999-F or
	2211793	2SA992-E
	Diodes	
D601~D608	223163 or	1SS133 or
	223205	1SS270A
	Capacitors	
C603	373631014	100pF,100V,Film(KP)
C604	373631514	150pF,100V,Film(KP)
C605,C606	373632214	220PF,100V,Film(KP)
C607,C608	374731034	0.01 μF,100V,Film(TF)
C611,C612	391654707	47 μF,25V,Elect.(FS)
C613,C614	393322217	220 μF,6.3V,Elect.(VX)
C615	3500149	330 μF,160V,Elect.
C624,C625	373631014	100pF,100V,Film(KP)
C626~C629	393322217	220 μF,6.3V,Elect.(VX)
C634~C637	373631014	100pF,100V,Film(KP)
	Resistors	
R606	5104312	N27DGL20KA20,Variable
R629	441625624	5.6KΩ,1W,Metal oxide film
	Switch	
S601	25030360	NRS-142-20S,Rotary
	Plugs	
P605a	25055132	NPLG-2P-116
P607a	25055099	NPLG-2P-83
P608a	25055138	NPLG-8P-122
	Radiators	
	27160220 or	RAD-51(B) or
	27160220-1	RAD-51(B)

BALANCED INPUT TERMINAL (Lch) PC BOARD (NAETC-4521-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Socket	
P501	25050777	NSCT-3P572
	Socket ass'y	
P502	2009990236	NSAS-6P0341

BALANCED INPUT TERMINAL (Rch) PC BOARD (NAETC-4522-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Socket	
P601	25050777	NSCT-3P572
	Socket ass'y	
P602	2009990236	NSAS-6P0341

UNBALANCED INPUT TERMINAL PC BOARD (NAETC-4523-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminal	
P503	25045161	NPJ-2PDBL58
	Socket ass'y	
P504	2009990234	NSAS-4P0339
P604	2009990235	NSAS-4P0340
	Capacitors	
C501,C502	373631014	100pF,100V,Film(KP)

FUSE PC BOARD (NAETC-4524-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Fuse holder	
F903a	25050065	YSH403T
	Plug	
P905	25055167	NPLG-4P151

FUSE PC BOARD (NAETC-4525-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Fuse holder	
⚠F904a	25050065	YSH403T
	Plug	
⚠P908	25055167	NPLG-4P151

PROTECT AND METER CIRCUIT PC BOARD (NAETC-4526-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q716	222850381	4538B
Q801,Q802	222502	NJM4558DX
Q805,Q806		
Q815,Q816		
Q803,Q804	222570	NJM4560DX
Q809,Q810	222509	TA7318P
Q931	222780125	78M12HF
Q951,Q952	222780205MIT	M5F78M20L
Q953,Q954	222790205MIT	M5F79M20L

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D701~D703	223163 or	1SS133 or
D705~D708	223205	1SS270A
D711,D712		
D714~D717		
D753,D754		
D801,D802		
D807,D808		
D811~D815		
D704	224450623	MTZ6.2C,Zener
D713	224450823	MTZ8.2C,Zener
D751,D752	224451203	MTZ12C,Zener
D755,D756	224451203	MTZ12C,Zener
D757~D760	225251	TLR112,LED
D803~D806	224450512	MTZ5.1B,Zener
D931~D943	22380046 or	AM01Z or
D951~D960	22380035	GP104003E
	Capacitors	
C702	393321017	100 μF,6.3V,Elect.(VX)
C703	393384797	0.47 μF,50V,Elect.(VX)
C704	393343317	330 μF,16V,Film(VX)
C706	393342207	22 μF,16V,Elect.(VX)
C707	393344707	47 μF,16V,Elect.(VX)
C709	393380477	4.7 μF,50V,Elect.(VX)
C805~C818	393380337	3.3 μF,50V,Elect.(VX)
C819~C822	393380107	1 μF,50V,Elect.(VX)
C823,C824	374723944	0.39 μF,50V,Film(TF)
C825~C828	393380477	4.7 μF,50V,Elect.(VX)
C829,C830	393344707	47 μF,16V,Elect.(VX)
C841~C845	374721035	0.01 μF,50V,Film(TF)
C931,C932		
C933	393362207	22 μF,35V,Elect.(VX)
C934	3500148	3300 μF,35V,Elect.
C935	393341017	100 μF,16V,Elect.(VX)
C936	393344717	470 μF,16V,Elect.(VX)
C951~C956	374721035	0.01 μF,50V,Film(TF)
C957~C960	3500147	6800 μF,35V,Elect.
C961~C964	393361017	100 μF,35V,Elect.(VX)
C965,C966	374721035	0.01 μF,50V,Film(TF)
	Resistors	
R757,R758	4000028	D-33A,Thermistor
R777,R778	5210272	N06HR470BEM,Semi-fixed
R853,R854	442522714	270Ω,1/2W,Metal oxide film
R865~R868	5210272	N06HR470BEM,Semi-fixed
R895~R898	441724704	47Ω,2W,Metal oxide film
R931~R934	452532294	0.22Ω,1/2W,Metal
R951~R958		
R935	442522224	2.2KΩ,1/2W,Metal oxide film
	Switch	
S801	25035644	NPS-322-L597
	Relaies	
RL811~RL814	25065282	NRL-2P1,25A-DC12-39
RL815	25065458	NRL-2P2A-DC12-077

CIRCUIT NO.	PART NO.	DESCRIPTION
	Socket ass'y	
P505	2009990258	NSAS-4P0376
P605,P703	2009990238	NSAS-4P0343
P704		
P701,P702	2009990240	NSAS-6P0345
P705	2009990242	NSAS-6P0347
P708	2000750	NSAS-20P706
P712,P713	2009990255	NSAS-10P0370
	Plugs	
P801,P802	25055233	NPLG-2P-217
P911,P912	25055175	NPLG-3P159
P913,P914	25055174	NPLG-2P158
	Radiator	
	27160311	RAD-92

METER LAMP (Lch) PC BOARD (NAETC-4527-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Lamps	
PL801,PL802	210191A	PL14V150mA

METER LAMP (Rch) PC BOARD (NAETC-4528-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Lamps	
PL803,PL804	210191A	PL14V150mA

HEADPHONE TERMINAL PC BOARD (NAAF-4529-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Socket ass'y	
P706	2009990259	NSAS-6P0377
P707	2009990241A	NSAS-6P0346
	Stereo jack	
P716	25045368	HLJ4307-01-3110

LED DISPLAY PC BOARD (NADIS-4530-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistor	
Q911	2213160	DTC124ES
	Diodes	
D571,D572	225142DX2	SEL2913K-DX2,LED
D821,D911		
	Jumper	**socket**
JL571	25050267	NSCT-3P95
JL911	25050269	NSCT-5P97
	Holders	
	27190787	(LED-1)

LED DISPLAY PC BOARD (NADIS-4531-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D737,D738	225142DX2	SEL2913K-DX2,LED
	Jumper	**socket**
JL731	25050267	NSCT-3P95
	Holders	
	27190787	(LED-1)

POWER SWITCH CIRCUIT PC BOARD (NASW-4532-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
⚠ C911,C912	3500065A	0.01 μF,AC400V/125V,Film(IS)
⚠ C913,C914	3500163	4700pF,AC250V,Film(IS)
	Cover	**(Capacitor)**
⚠ C911a,C912a	27301216	SB1925A
	Switch	
⚠ S901	25035614	NPS-121-L576P
	Terminals	
	25060092	NTM-1S33

NOTE:
THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CHASSIS-EXPLODED VIEW PARTS LIST

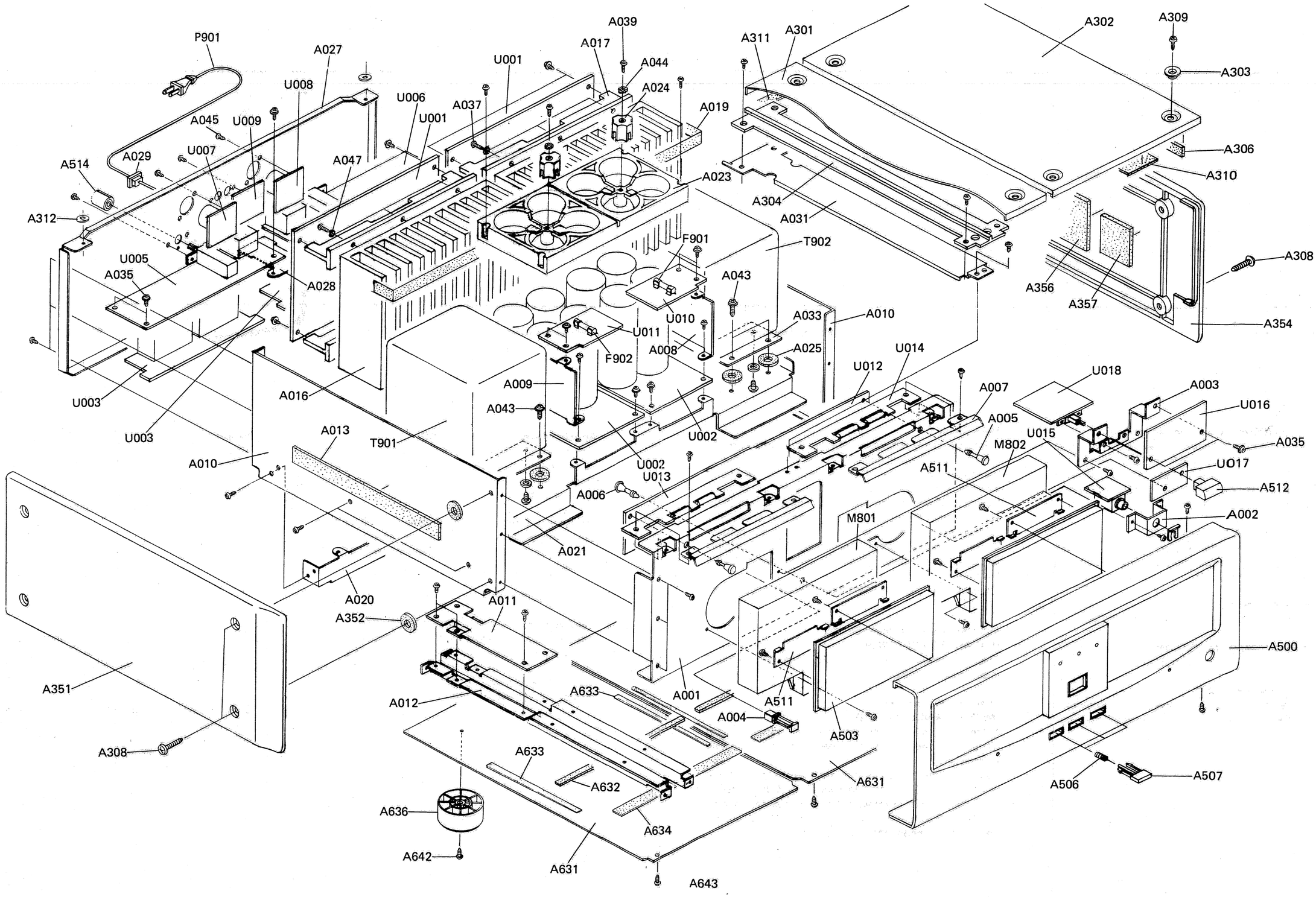
REF NO.	PART NO.	DESCRIPTION
A001	27110697	Front bracket
A002	27141550	Bracket(HP)
A003	27141543	Bracket(POW)
A004	27273151A	Joint(PUSH)
A005	27190814	KGLS-24RF,Holder
A006	27190266	KGLS-12RF,Holder
A007	27141065A	Bracket(LAMP)
A008	27130706	Bracket(CR)
A009	27130707	Bracket(CL)
A010	27115252A	Side bracket
A011	27130691	Bracket(SH)
A012	27130689	Bracket(BO)
A013	28140695	t1.5×25×240,Cushion
A015	27301328	BFG-20,Sheet(Transistor)
A016	27160310	Radiator
A017	27160309	Radiator(SUB)
A019	29110083	Tepe(Cloth-16U)
A020	27130692A	Bracket(PC)
A021	27130687	Bracket(PT)
A023	27190891A	Holder(Elect.capacitor)
A024	27190892A	Holder(S)
A025	27270352	Spacer(PT)
A027	27121580B	Rear panel
A028	27141545	Bracket(PC)
A029	28190009	#2272,Bushing(CORD)
A030	27141570	Bracket(BUSH)
A031	27130688A	Bracket(COVER)
A033	27130708	Bracket(TRANS)
A035	831130088	3TTW+8B,Tap-tight screw
A037	834430128	3TTS+12B(BC),Tap-tight screw
A039	833440200	4TTP+20P(BC),Tap-tight screw
A040	801514	5SMP.SW+12FN,Special screw
A041	801433	3SMS10WSW+14B(BC), Special screw
A043	830440109	4TTC+10C(BC),Tap-tight screw
A044	87344008	M-4B(BC),Toothed washer
A045	82142604	2.6P+4F(BC),Pan head screw
A047	87313006	M-3B,Toothed washer
A301	28184517A	Top cover(L)
A302	28184518A	Top cover(R)
A303	27265155A	Decorative ring(COVER)
A304	28194355A	Decorative bar
A306	28140693	t1.5×10×185,Cushion
A308	837440169	4TTT+16C(BC),Tap-tight screw
A309	838440109	4TTB+10C(BC),Tap-tight screw
A310	28141219	t1.5×20×240mm,Cushion
A311	28140972	t1.5×25×140mm,Cushion
A312	27270293	Spacer
A351	28185381A	Side board(L)
A352	28141210	Cushion
A354	28185382A	Side board(R)
A356	28140898	1.5×70×140,Cushion
A357	28140807	1.5×50×50,Cushion
A500	1A369701K	Front panel ass'y [BLK]
(A502)	28135199	Name plate
(A505)	27215230B	Decorative frame [BLK]
(A506)	27180520	Spring
(A507)	28324627	Knob(PUSH) [BLK]
(A508)	28198742	Facet
(A509)	28198721	Facet
(A510)	27211428A	Front panel(F) [BLK]
A500	1A383701K	Front panel ass'y [SIL]
(A505)	27215233B	Decorative frame [SIL]
(A507)	28324687	Knob(PUSH) [SIL]
(A510)	27211452A	Front panel(F) [SIL]

REF NO.	PART NO.	DESCRIPTION
A503	28191631A	Glass board
A511	27141554	Bracket(ME)
A512	28324628	Knob ass'y(POW) [BLK]
A512	28324685	Knob ass'y(POW) [SIL]
A514	28324649	Knob(SEL)
A631	27170292A	Bottom board(R)
A632	28140693	t1.5×10×185,Cushion
A633	28140835	t0.5×10×135,Cushion
A634	28140782	t1.5×25×170,Cushion
A636	27175251	Bottom leg
A642	831430088	3TTW+8B(BC),Tap-tight screw
A643	801230	3STS+8BQ(BC),Tap-tight screw
Q1601~Q1603	2202644 or	2SC3284-Y or
Q1607~Q1609	2202646 or	2SC3284-P or
	2202643	2SC3284-O,Transistor
Q1604~Q1606	2202634 or	2SA1303-Y or
Q1610~Q1612	2202636 or	2SA1303-P or
	2202633	2SA1303-O,Transistor
⚠ T901,T902	2300834B	NPT-1151P,Power transformer
⚠ P901	253131A	AS-CEE-3,Power supply cable
M801,M802	243151A	NIND-2000S151,Power meter [BLK]
M801,M802	243153A	NIND-2000S153,Power meter [SIL]
⚠ F903,F904	252077 or	4A-SE-EAK or
	252077CC	4A-SE-EAK,Fuse
	79185	Glass tube
U001	1A368516-1	NAAF-4516-1,Main circuit pc board ass'y
U002	1A368517-1	NAPS-4517-1,Power supply circuit pc board ass'y
U003	1A368518-1	NAETC-4518-1,Speaker terminal circuit pc board ass'y
U005	1A369519-1A	NAAF-4519-1A,Input circuit pc board ass'y(Lch)
U006	1A369520-1A	NAAF-4520-1A,Input circuit pc board ass'y(Rch)
U007	1A368521-1	NAETC-4521-1,Balanced input terminal pc board ass'y(Lch)
U008	1A368522-1	NAETC-4522-1,Balanced input terminal pc board ass'y(Rch)
U009	1A369523-1A	NAETC-4523-1A,Unbalanced input terminal pc board ass'y
U010	1A368524-1A	NAETC-4524-1A,Fuse pc board ass'y (Lch)
U011	1A368525-1A	NAETC-4525-1A,Fuse pc board ass'y (Rch)
U012	1A368526-1	NAETC-4526-1,Protect and Meter circuit pc board ass'y
U013	1A368527-1	NAETC-4527-1,Meter lamp pc board ass'y(Lch)
U014	1A368528-1	NAETC-4528-1,Meter lamp pc board ass'y(Rch)
U015	1A368529-1	NAAF-4529-1,Headphone terminal pc board ass'y
U016	1A368530-1	NADIS-4530-1,LED display pc board ass'y
U017	1A368531-1	NADIS-4531-1,LED display pc board ass'y
U018	1A368532-1A	NASW-4532-1A,Power switch circuit pc board ass'y

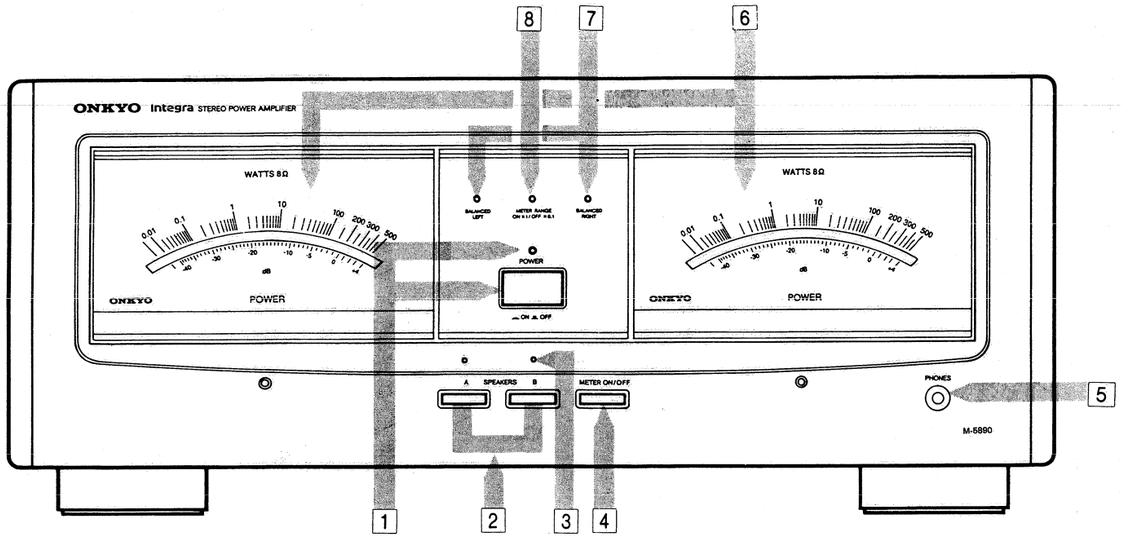
NOTE : [BLK]:Only Black models
[SIL]:Only Silver models

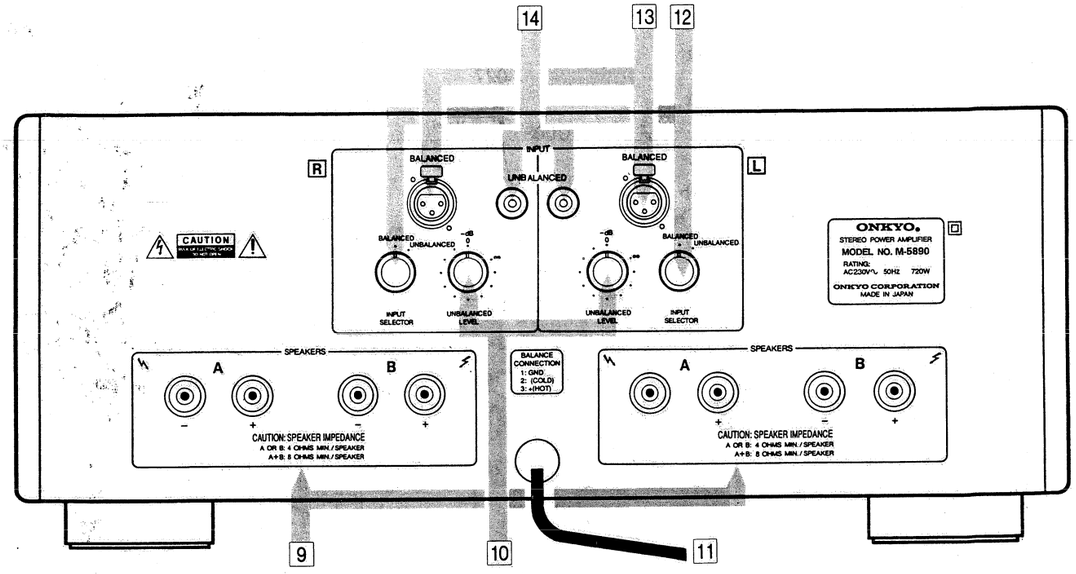
NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CHASSIS-EXPLODED VIEW



FRONT AND REAR PANEL





1 **Power Switch (POWER) and Power Indicator**
Press this switch to turn the power on (▬), and the orange power indicator above the switch will light. Press this switch again to turn the power off (▟). After the power is turned on, sound is not generated for approximately 5 seconds, until the circuit is stable.

2 **Speaker Switches (A SPEAKERS B)**
This switch turns the speaker terminal ON or OFF. Press switch A or switch B to respectively turn ON the sound of SPEAKER A or SPEAKER B.

3 **Speaker Display Indicator**
This indicator is lit when the speaker switch is ON.

4 **Meter ON/OFF Switch (METER ON/OFF)**
This switch turns the peak meter ON or OFF.

5 **Headphone Jack (PHONES)**
Insert the headphone plug, and speaker sound output will cease, and only the sound output from the headphone can be heard.

6 **Peak Meter**
This large-sized peak meter is designed so that the pointer returns slowly when it deflects, enabling easy reading of the instant peak value. The watt division of the meter indicates the output power of the sine wave whose peak level is equivalent to the peak level of an audio signal for 8Ω speakers. The output for the 4Ω speaker is twice the division value. After the power is turned on, the lamp of this meter does not light for approximately 5 seconds, until the circuit is stabilized. The pointer will not deflect during this time.
The light also goes out when the protection circuit operates.

7 **Input Selector Display Indicator (BALANCED LEFT/RIGHT)**
This lights when the input selector switch of the rear panel is set to BALANCED.

8 **Meter Range Indicator (METER RANGE ON × 1/OFF × 0.1)**
M-588F automatically changes the meter range, so that the pointer deflection of the peak meter is constantly conspicuous.
When the meter range indicator is lit, the peak meter range is × 1 (500W). When the indicator is not lit, the range is × 0.1 (50W). For example, if the meter pointer position is100W, a lit indicator means this value is 100W, and an unlit indicator means this value is 10W.

9 **Speaker Terminals (SPEAKERS)**
Two types of speakers, A and B, can be respectively connected to the L and R terminals. The A and B speakers can be turned off independently by using the front panel speaker switch.

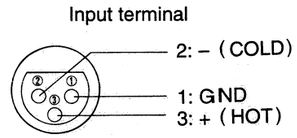
10 **Input Level Control (INPUT UNBALANCED LEVEL)**
When the signal is input from the Unbalanced Input terminal, use this control to independently adjust the level for the L and R terminals.

11 **Power Supply Cord.**

12 **Input Selector Switch (INPUT SELECTOR)**
Use this switch to select the Balanced input terminal or the Unbalanced input terminal. Set both the L and R switches in accordance with the input terminal you use. The front panel indicator lights when the input selector switch is set to BALANCED.

13 **Balance Input Terminal (INPUT BALANCED)**
This terminal connects a preamplifier which has Balanced output. When using this input terminal, set the input selector switch to BALANCED.
This terminal is equivalent to XLR-3-31. Suitable connectors are XLR-3-12C equivalent products.

Pin polarity

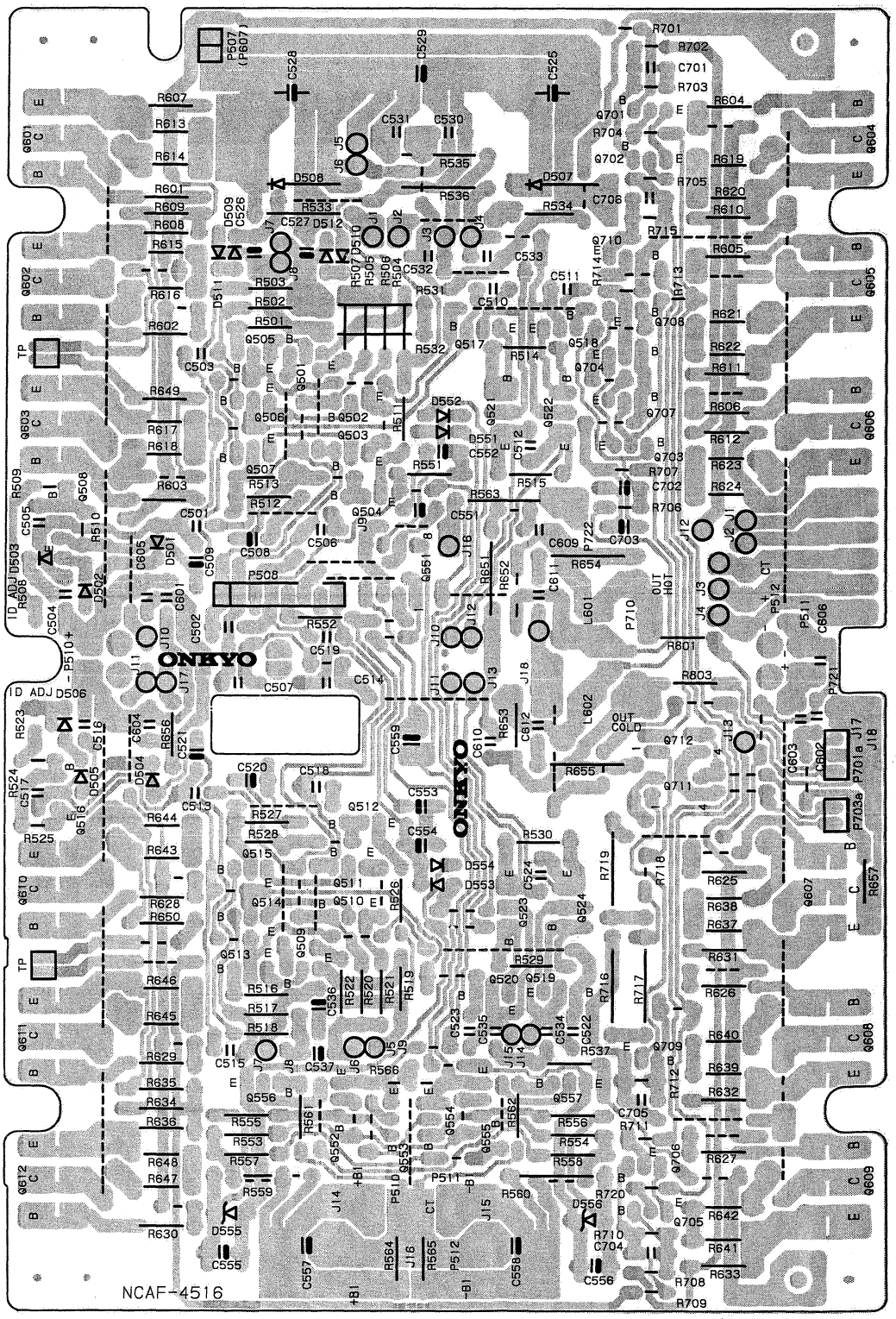


When the signal is input from the Balanced input terminal, level adjustment is not possible. Do not connect a CD player or other device with Balanced output which cannot adjust the output level.

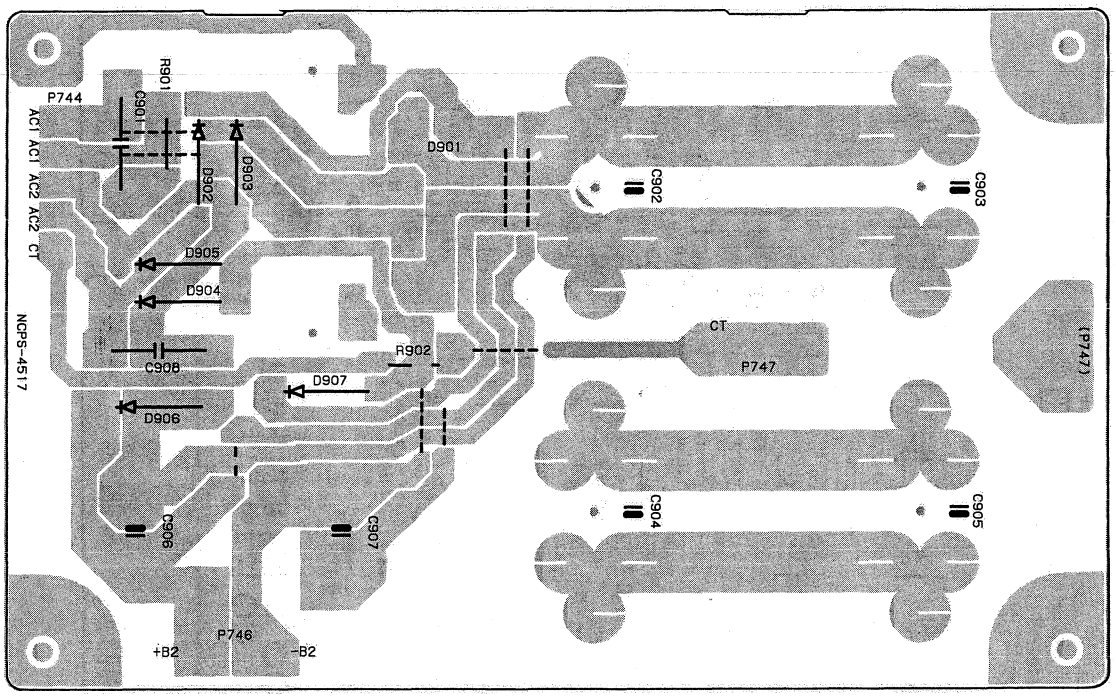
14 **Unbalanced Input Terminal (INPUT UNBALANCED)**
This terminal connects to equipment which has unbalanced output, such as a general amplifier. Use a pin cord for the connection. When using this input terminal, set the input selector switch to UNBALANCED.

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

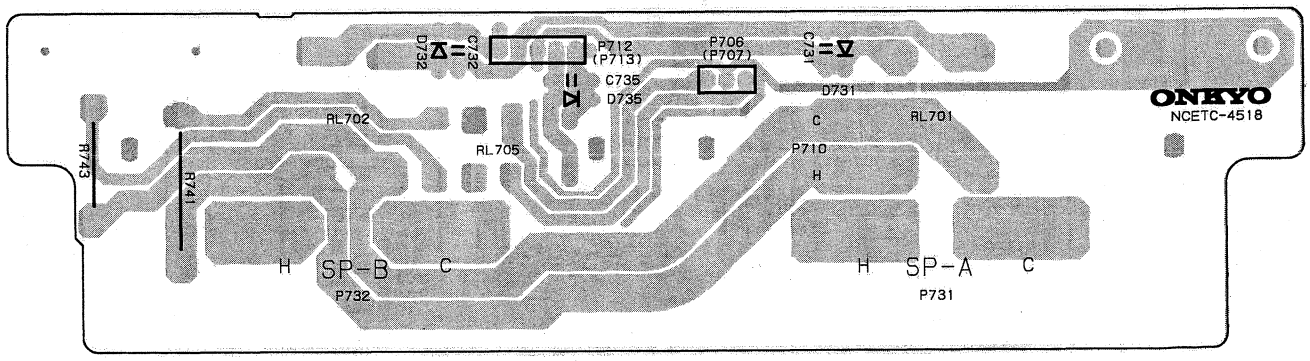
NAAF-4516



NAPS-4517



NAETC-4518



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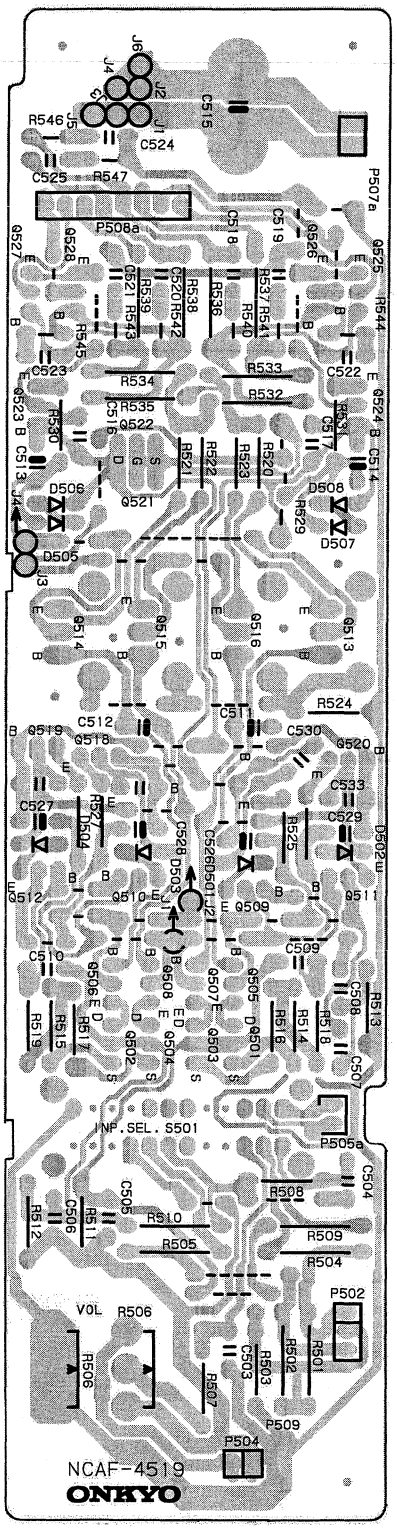

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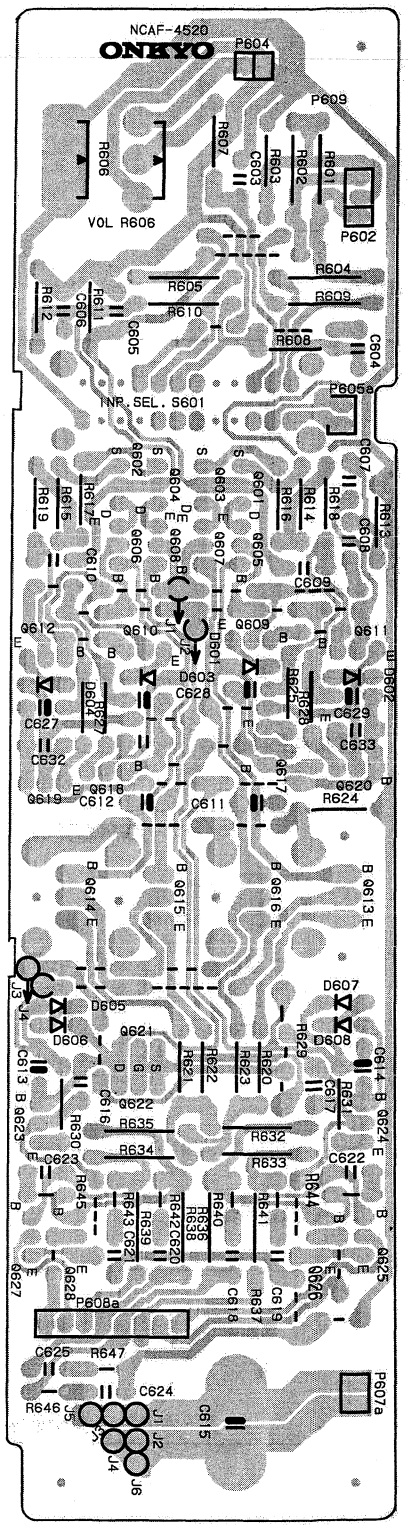
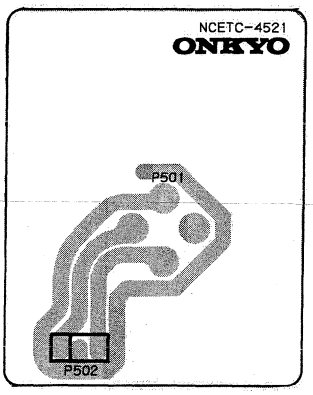


NAETC-4521



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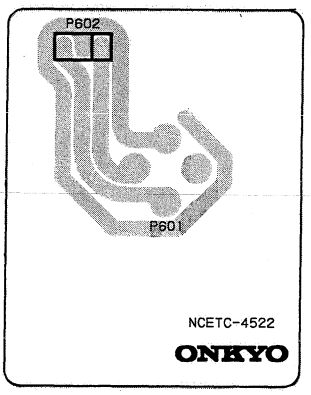

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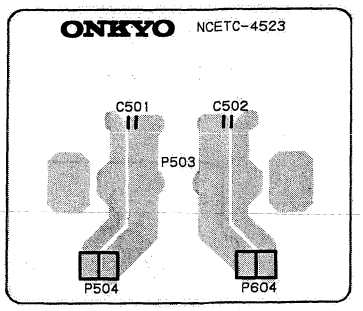
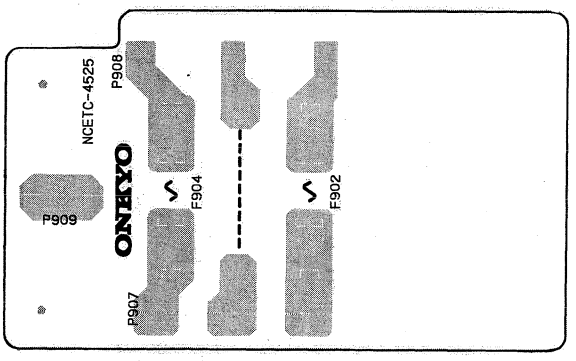
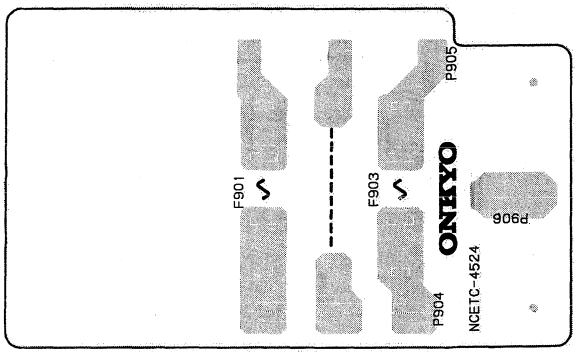


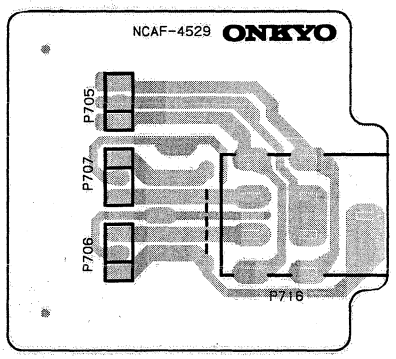
NAETC-4524



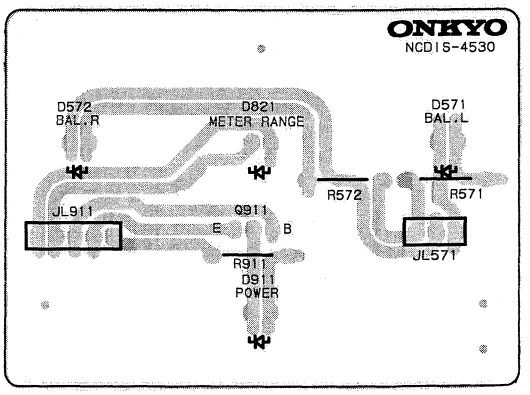
NAETC-4525



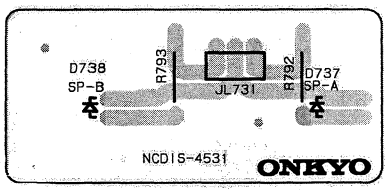
NAAF-4529



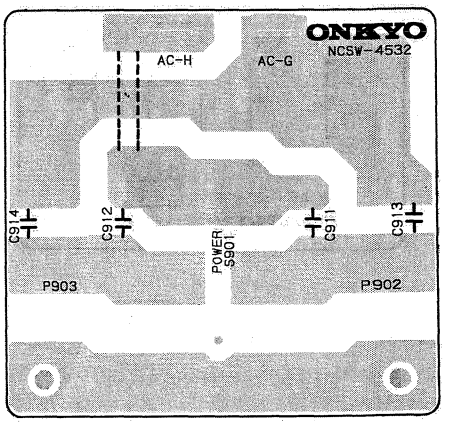
NADIS-4530



NADIS-4531



NASW-4532



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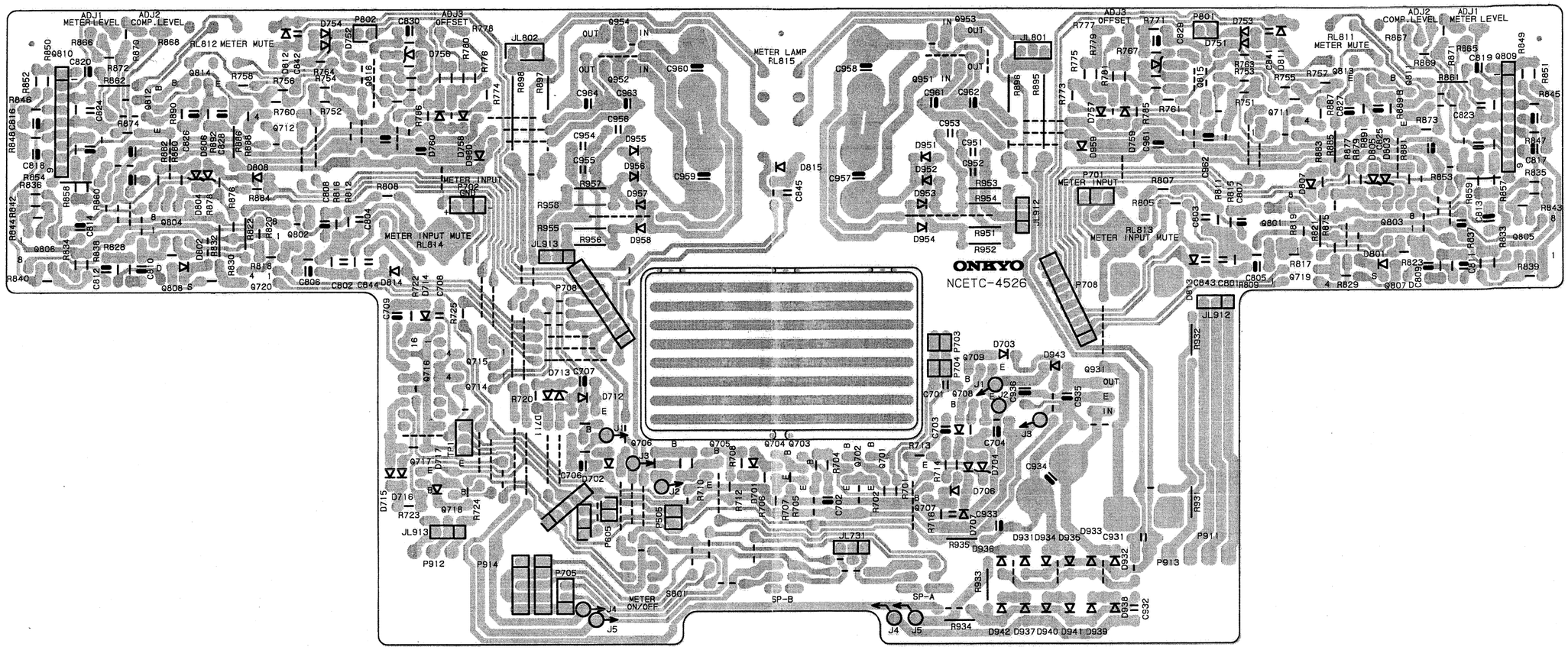
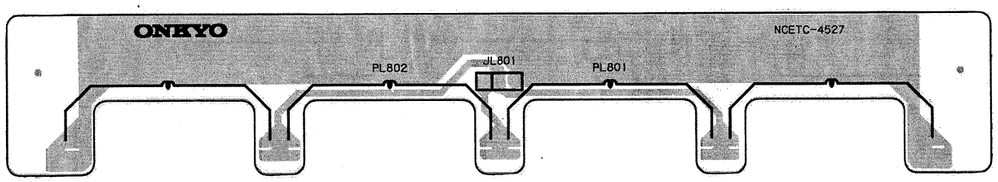
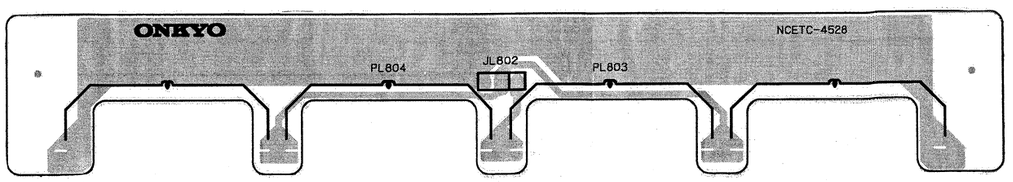


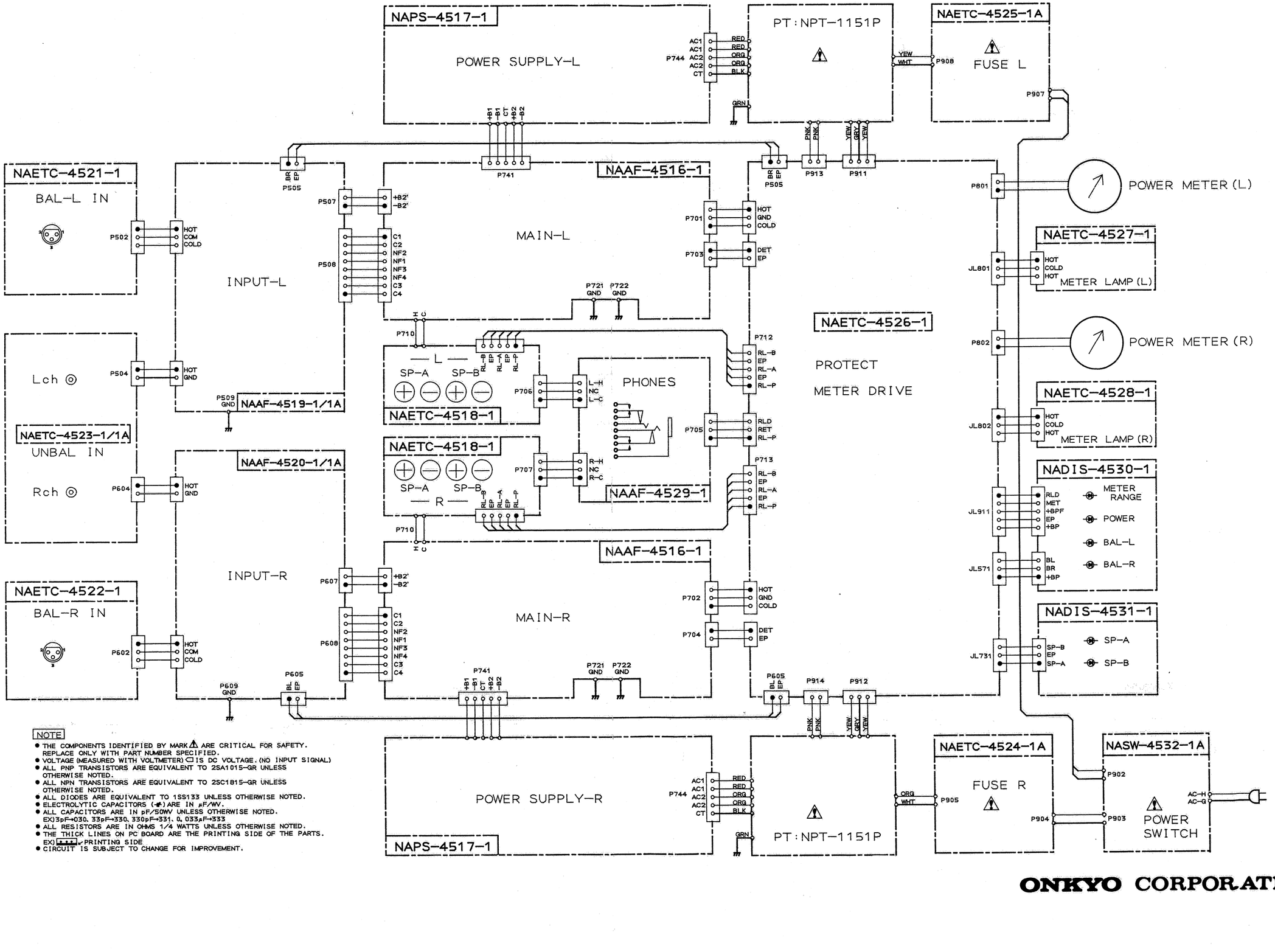
NAETC-4527



NAETC-4528



SCHEMATIC DIAGRAM

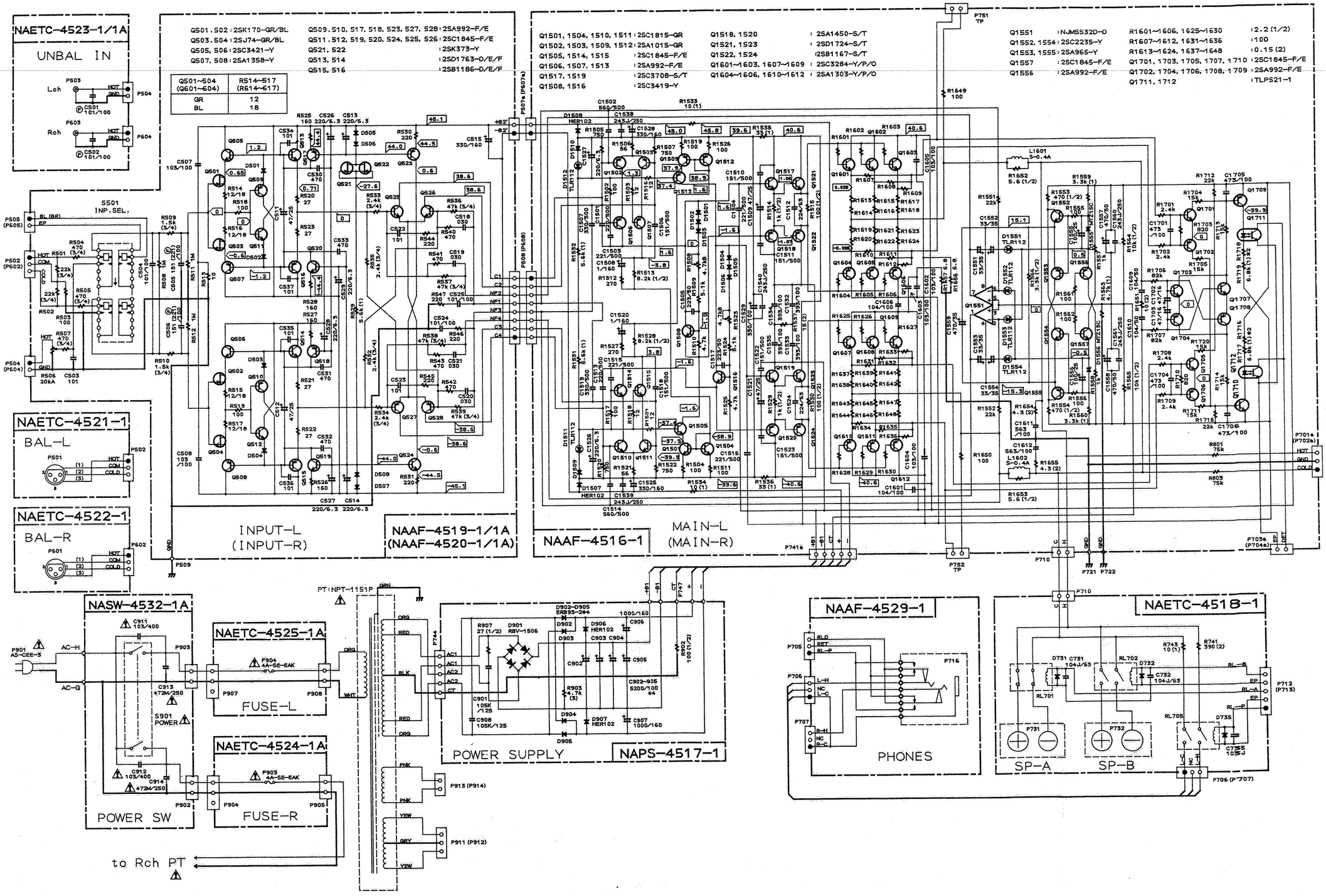


NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) ⊐ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (-#) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
  EX) 3pF→030, 33pF→330, 330pF→331, 0.033μF→333
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES ON PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
  EX) ▭▭ : PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

ONKYO CORPORATION

SCHEMATIC DIAGRAM



ONKYO CORPORATION

SCHEMATIC DIAGRAM

NADIS-4531-1

NADIS-4530-1

NAETC-4526-1

NAETC-4527-1

NAETC-4528-1

PROTECT

METER DRIVE (L)

METER DRIVE (R)

METER ON/OFF

METER INPUT MUTE

RL815 METER LAMP

POWER METER (L)

POWER METER (R)

D571, 572, 737, 738, 821, 911 :SEL2913K2-DX2

D931~943:1SR139-100 or AM01Z

Q701~705, 707:2SC1740-R/S

Q803, 804:NJM4560DX

Q801, 802, 805, 806, 815, 816 :NJM4558DX

Q807, 808:2SK170-GR

Q809, 810:TA7318P

Q714, 715:TLP521-1

Q811~814:RN-1241-A/B

Q951, 952:M5F78M20L

D951~954 :1SR139-100 or AM01Z

Q953, 954:M5F79M20L

ONKYO CORPORATION

PARTS LIST OF PACKING

REF. NO.	PART NO.	DESCRIPTION
A851	29052422	Carton box [BLK]
A851	29052463	Carton box [SIL]
A852	29091570	Pad,Left
A853	29091571	Pad,Right
A856	261504	Paper tape
A858	29110071	Damplon tape
A862	29100035A	1020×720mm,Poly-vinyl bag
A863	282301 or	Sealing hook or
	282311	Sealing hook

ACCESSARY BAG ASS'Y

A901	29341744A	Instruction manual
A902	2010238	Connection cable
A903	2010270	NBC-150B,Balanced cable ass'y
A904	2010271	NBC-150R,Balanced cable ass'y
A905	29095658	Sheet(F)
A906	29100097	350×250mm,Poly-vinyl bag for accessary
A910	29365020F	Warranty card
	29100094A	Poly-vinylbag(Warranty)
	29355133A	DBP,Caution

NOTE : [BLK]:Only Black models
[SIL]:Only Silver models

SYSTEM CONNECTION

Do not plug in the power cord until all other connections have been completed and checked.